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ORIGINAL ARTICLE

Quality of the caregiving relationship and quality of life in mild Alzheimer's dementia

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Key words: Alzheimer's disease, caregiving relationship, dementia, quality of life.

Abstract

Background: The present study aims to investigate the quality of the dyadic relationship between mild Alzheimer patients and their caregivers. The main objective is to evaluate the consistency, agreement and validity of the German version of the Scale for Quality of the Current Relationship in Caregiving (SQCRC). The secondary objective was to examine the association of relationship quality with quality of life (QOL) in patients with mild Alzheimer's disease (AD) and their caregivers.

Methods: In this study, a sample of 50 patients diagnosed with mild AD and their primary caregivers were included. Participants underwent a full neuropsychological evaluation. The quality of the relationship between persons with AD and their caregivers was assessed using the SQCRC. Furthermore, other scales of relationship quality, well-being of the person with AD, and well-being of the caregiver were used.

Results: The results showed that the SQCRC has a good internal consistency and high validity. Also, relationship quality as rated by the AD patients ($r = 0.37$, $P < 0.1$) and their caregivers ($r = 0.51$, $P < 0.1$) was significantly correlated with QOL.

Conclusions: The findings suggest that many persons with mild AD can rate their relationship quality and that the patient's self-rated relationship quality is a substantial predictor of their QOL.

INTRODUCTION

Although Alzheimer's disease (AD) is the most frequent type of dementia, and extensive research has been carried out to discover effective treatments, it remains incurable. AD is a progressive brain disorder which is characterised by the decay of cognitive capacities, impairment in daily activities and several behavioural and psychological symptoms.^{1,2} Therefore, having these symptoms may have a major impact on general well-being and quality of life (QOL) in patients with AD.³ Numerous studies have also described an association between depression and impaired QOL in AD patients.^{4–8} So far, due to inaccessible therapy for the treatment of AD, most research has focused on enhancing QOL and well-being for the patients and their caregivers.

It is a fact that caregivers encounter multiple challenges in caring for people with AD, and in the case of progressive AD, those challenges may alter.⁹ Higher levels of distress, depression and stress were observed among caregivers of dementia patients in contrast to non-carers.^{10,11} The evidence suggests that caregivers who suffer an extreme burden may perceive the care recipient as being more impaired than he/she really is.^{12,13} Insecure attachment styles in caregivers and care recipients are likely to increase the levels of dementia-related problem behaviour and were shown to be associated with a lower quality of caregivers' well-being.¹⁴ Consequently, poor emotional health and depression among caregivers impact the relationship between them and the care receivers.¹⁵

There is increasing evidence that the burden of caregiving can influence the quality of the dyadic relationship between the caregiver and care recipient.¹⁶ Some studies found that a closer relationship between AD patients and caregivers can enhance well-being and problem-solving skills,¹⁷ that it results in positive outcome such as fewer behavioural symptoms¹⁴ and leads to better mental health.¹⁸ Possessing a relationship of a good quality results in a higher degree of well-being among caregivers and care recipients.¹⁹ Additionally, a high relationship quality might diminish the deterioration of cognitive and functional capacity.²⁰ However, a relationship of a lower quality, probably due to high burden in the caregiver, could negatively affect the caregiver's well-being.²¹

Spruytte *et al.*²² investigated the quality of the caregiving relationship using the Scale for Quality of the Current Relationship in Caregiving (SQCRC²³), which was designed to assess warmth of the relationship (e.g., 'the patient and I often spend enjoyable moments together') and the absence of conflict and criticism (e.g., 'the patient and I often disagree') in the caregiving relationship including parents, partners and caring children. The SQCRC consists of 14 items on a 5-point scale and has demonstrated acceptable internal consistency (0.82) and concurrent validity.²² Accordingly, the SQCRC has been used in intervention trials to assess the impact of cognitive stimulation therapy (CST),²⁴ individual cognitive stimulation therapy (iCST),^{25,26} cognitive behavioural therapy (CBT)²⁷ life review and life story books,^{28,29} and reminiscence therapy.^{30,31} Moreover, McKechnie *et al.*³² examined the effectiveness of an internet forum for the caregivers of people with dementia using the SQCRC and found an improvement in the quality of the relationship with the person with dementia.

Even though the caregiving relationship is defined by two individuals, to our knowledge and particularly in relationships between AD patients and their caregivers, most research has emphasised relationships from one perspective, usually from that of the caregiver. However, it is also significant to provide a possibility to estimate the quality of the caregiving relationship as rated by the AD patients themselves. The aim of this study, therefore, was to evaluate the consistency, agreement, and validity of the German version of the SQCRC as a rare measure of a

caregiving relationship that is suitable for a variety of relationships, not only for couples. Furthermore, we wanted to determine whether QOL is associated with the SQCRC, which is something which no studies have previously achieved.

METHODS

Sample

Our sample consisted of caregivers and patients with AD ($n = 50$) living at home and requiring at least some assistance due to their AD. The data used in this article come from the baseline assessment of the Cognitive Behavioural Treatment for Mild Alzheimer's Patients and their Caregivers (CBTAC) study³³ (trial registration: ClinicalTrials.gov NCT01273272). The participants were recruited from three sources: (i) the Psychiatric University Hospital Zurich, Department of Gerontopsychiatry; (ii) the outpatient clinic of the University of Zurich, Department of Psychopathology and Clinical Intervention; and (iii) other geriatric or memory clinics and general practitioners in the greater area of Zurich, Switzerland. The patients were referred to the clinics either for confirmation of possible dementia or for the treatment of affective symptoms.

The inclusion criteria were as follows: the patients had to meet the criteria of the National Institute of Neurological and Communicative Disorders and Stroke – Alzheimer's disease and Related Disorders Association (NINCDS–ADRDA) for probable or possible AD.³⁴ Mixed Alzheimer's and vascular dementia cases have also been included. Only cases of AD with a mild severity of dementia were included, as determined by the Clinical Dementia Rating Scale (i.e., scores of 0.5 or 1)³⁵ and by the Mini-Mental State Examination (i.e., scores of 20 or more).³⁶ The patient had to experience at least one non-cognitive symptom such as depression, apathy, anxiety or irritability. A caregiver had to be available to take part in most of the treatment sessions. This was typically the partner, but a child or a very good friend was also acceptable.

The exclusion criteria were a concomitant alcohol or drug addiction and a history of a malignant disease, severe organ failure, metabolic or haematological disorders, neurosurgery or a neurological condition, such as Parkinson's disease, epilepsy, post-encephalitic or post-concussion syndrome.

All participants with mild AD had enough language capacity to fill in the questionnaires and answer the interview questions. When difficulties in understanding occurred, the questions were reformulated. This was necessary in only few cases. When the attention decreased, the assessment was divided into two sessions.

Ethics approval was obtained through the Swiss Ethics Committee in the Canton of Zurich (reference number 2009–0078/3). The study was performed in accordance with the ethics standards of the Declaration of Helsinki. All persons gave informed consent before their inclusion in the study.

Assessment of relationship quality

SQCRC

The SQCRC provides a possibility for measuring the quality of a relationship between a person with dementia and a caregiver, where the caregiver can be the partner, a child or a good friend.^{22,23} The SQCRC consists of two subscales, warmth/affection and conflict/criticism. The warmth subscale assesses the exchange of positive affect (e.g., ‘My relative and I often spend time together in an enjoyable way’), while the conflict subscale assesses the exchange of negative affect (e.g., ‘There is a big distance between my relative and myself’). The SQCRC comprises 14 items which are rated by the participants from 1 (totally agree) to 5 (totally disagree). The items of the conflict subscale must be reversed. A high score on the scales implies the presence of warmth and affection and the absence of conflict and criticism in the relationship.

The German version of the English SQCRC was developed in a standard translation and retranslation process with the help of a native English speaker. After the retranslation into English, the items of the German version were slightly adapted.

Dyadic trust scale (DTS)

The DTS³⁷ consists of eight statements which describe an overall feeling of interpersonal trust in a relationship (e.g., ‘I feel that I can trust my partner completely’) to measure the degree of an individual to trust his or her partner in the relationship. A high score indicates a high degree of trust. Larzelere and Huston³⁷ proved the validity and reliability of the DTS and reported high face validity, construct validity,

and reliability for associations with love, self-disclosure, and relationship status.

Partnership questionnaire (PQ)

The PQ³⁸ is a German self-report questionnaire with 30 items that are rated on a four-point scale from 0 (never) to 3 (always) and which assesses the general relationship quality of couples, but not of other relationships, such as child–parent dyads. It consists of three subscales: quarrelling, tenderness, and communication. Each item describes a typical couple behaviour related to satisfaction.

Assessment of well-being of the person with AD

Quality of life in Alzheimer’s disease (QOL-AD)

QOL-AD consists of 13 items which assess the QOL of people with AD.³⁹ The QOL-AD exists as a questionnaire measure (as rated by the caregiver) and an interview measure (to be conducted with a trained interviewer). We used the interview version. The 13 items cover several life domains, such as physical health, energy, mood, memory, or family. For example, the interviewer asked ‘First of all, how do you feel about your physical health? Would you say it’s poor, fair, good, or excellent? Point with your finger to whichever word you think best describes your physical health right now’. After asking one of the 13 items, the interviewer asks the patient to rate the quality of this life domain on a four-point scale as poor (i), fair (ii), good (iii), or excellent (iv). The total sum-score can be between 13 and 52. The QOL-AD has good internal consistency, validity and reliability.⁴⁰

Mini-mental status examination (MMSE)

Cognitive status was assessed by the MMSE.³⁶ It comprises 11 questions which examine five different cognitive domains of attention and calculation, orientation, recall, registration, and language. The score ranges from 0 to 30, and a score of 20 points or above is considered to classify for mild stage of dementia disease.

Geriatric depression scale (GDS)

The GDS is a self-report measure with 30 items which were created to assess depression in the elderly population.^{41,42} In this study, the self-report⁴² and informant-report format⁴³ versions of the GDS

were applied. In general, a score of 0–9 can be considered normal, 10–19 demonstrates mild depressive symptoms, and 20–30 shows severe depression.

Neuropsychiatric inventory (NPI)

The NPI is a structured interview with a caregiver, addressing 12 behavioural and affective domains common in dementia: agitation, irritability, anxiety, dysphoria, hallucinations, delusions, apathy, euphoria, disinhibition, aberrant motor behaviour, night-time disturbances and appetite and eating abnormalities.⁴⁴

Clinical insight rating (CIR)

The CIR is a clinical instrument for rating the lack of awareness of persons with AD.⁴⁵ It consists of four items that cover the patient's insight into: (i) the reason for the visit to the clinic, (ii) cognitive deficits, (iii) functional deficits, and (iv) progression of AD symptoms. Based on separate semi-structured interviews with the patient and caregiver, the clinician rates the level of insight (full, partial, and no insight) in each of the four domains and builds a total sum-score between 0 and 8. Zero indicates full awareness and 8 total unawareness.

Bayer activities of daily living scale (B-ADL)

The B-ADL estimates deficits in the performance of everyday activities in patients who suffer from mild to moderate dementia.⁴⁶ It comprises 25 items, each of which is rated by the caregiver from 1 to 10. A more severe deficit is indicated by a higher score.

Assessment of well-being of the caregivers

Centre for Epidemiological Studies depression scale (CES-D)

Depressive symptoms in the caregiver were measured by the CES-D,⁴⁷ which consists of 20 items as self-statements (e.g., 'I was bothered by things that usually don't bother me'). The caregivers rate the frequency of experiencing each symptom during the past week. The items were scored from 0 (less than 1 day) to 3 (5–7 days).

State trait anger expression inventory (STAXI2)

The assessment of anger was completed using the STAXI,⁴⁸ a self-report questionnaire which measures the experience, expression and control of anger. The

anger-in and anger-out scales were used. Participants were asked to respond to 57 items using a four-point scale (not at all to almost always).

Zarit burden inventory (ZBI)

The ZBI consists of 22 items to determine the burden experienced by caregivers caring for people with dementia.⁴⁹

Statistical analysis

The reliability of the SQCRC scale was analysed with Cronbach's alpha.⁵⁰ To assess the level of inter-rater reliability, intraclass correlation coefficients (ICC) were used. ICC < 0.40 is assumed as poor agreement, ICC 0.40–0.75 is moderate agreement, and ICC > 0.75 is considered as very good agreement. Further, correlation was used to assess the validity of SQCRC, and bivariate correlations were calculated to investigate the associations between the relationship quality (and discrepancy with regards to relationship quality) and other variables. Regression analyses were calculated (method: backward).

RESULTS

Participants' characteristics

A total of 50 patients with caregivers were recruited to this study. Two persons with AD and one caregiver refused to fill in the SQCRC, thus, data from 48 persons with AD and 49 caregivers were used. The majority of caregivers were partners (68.0%) and the rest were the children (18.0%), friends or nurses (10.0%) and other relatives (2.0%) of AD patients (see Table 1). Also, 66.0% of participants were female, 58.0% married, and, on average, 75 years of age (range 52–87). The MMSE mean was 24.35 (SD = 2.74), and CIR, GDS-Self, GDS-Informant means were 3.22 (2.66), 3.64 (3.38), and 9.42 (6.07) respectively.

Reliability of SQCRC

To determine the internal consistency of the SQCRC, Cronbach's α coefficients were calculated. Cronbach's α for the total value was 0.90 in patients and 0.86 in caregivers, which indicated a good internal consistency. The level of agreement for warmth and conflict were ICC = 0.38 and 0.37, respectively (see Table 2).

Table 1 Demographic characteristics, means, and standard deviations (SD) of measures (N = 50)

Variables	Person with AD, mean (SD) or % (n)	Caregiver, mean (SD) or % (n)
Age	76.16 (8.04)	66.47 (14.21)
Gender (female)	66.0% (33)	54.0% (27)
Cognitive status (MMSE)	24.35 (2.74)	
Clinical insight (CIR)	3.22 (2.66)	
Depression (GDS/CES-D)	3.64 (3.38)	9.42 (6.07)
Family status		
Single	12.0% (6)	
Married	58.0% (29)	
Separated/divorced	16.0% (8)	
Widowed	14.0% (7)	
Caregiving relationship		
Partner		68.0% (34)
Child		18.0% (9)
Other relatives		2.0% (1)
Friend or nurse		10.0% (5)

AD, Alzheimer's disease; MMSE, Mini-Mental State Examination; CIR, clinical insight rating; GDS, geriatric depression scale; CES-D, Centre for Epidemiological Studies depression scale.

Validity of the SQCRC

In order to evaluate the validity of SQCRC, the correlations with similar measures were calculated, namely the PQ and the DTS (see Table 2). The correlation in patients between DTS and SQCRC total score was $r = 0.63$ ($P < 0.01$), and between SQCRC and three subscales of the PQ (conflict, tender and communication) were $r = -0.53$ ($P < 0.01$), 0.73 ($P < 0.01$), and 0.73 ($P < 0.01$), respectively. Likewise, SQCRC as rated by the caregivers was correlated with trust

(DTS) ($r = 0.63$, $P < 0.01$), conflict (PQ) ($r = -0.35$, n.s.), tenderness (PQ) ($r = 0.42$, $P < 0.05$) and communication (PQ) ($r = 0.39$, $P < 0.10$).

Associations with QOL in the person with AD

In assessing the extent to which relationship quality can predict QOL-AD patients, the association between relationship quality, besides other potential predictors, and QOL in patients were analysed. From the patient variables, SQCRC ($r = 0.37$, $P < 0.01$), functional impairment (B-ADL) ($r = -0.35$, $P < 0.05$) and depression (GDS-self-report) ($r = -0.36$, $P < 0.01$) in AD patients were significantly correlated with QOL. Cognitive status (MMSE), awareness of disease (CIR), and neuropsychiatric symptoms were not significantly associated with QOL ($r = -0.14$, $r = 0.13$, and $r = -0.27$, respectively). From the caregiver variables, a significant correlation of SQCRC score with QOL in the patient emerged ($r = 0.51$, $P < 0.01$). The caregiver burden (ZBI) was significantly negatively associated with QOL ($r = -0.33$, $P < 0.05$), but other variables showed no significant correlations with QOL, as depicted in Table 3. When these variables were included in a regression analysis, it was only the depression of the patient and the relationship quality as rated by the caregiver that were associated with QOL.

Associations with the discrepancy in relationship quality

To investigate the predictors of the discrepancy in relationship quality between AD patients and their caregivers, in a first step, bivariate (Pearson's)

Table 2 The SQCRC: internal consistency, agreement between persons with AD and caregivers, and validity correlations (N = 50)

	Person with AD			Caregiver		
	Warmth	Conflict	Total	Warmth	Conflict	Total
Internal consistency (α)	0.85	0.83	0.90	0.83	0.67	0.86
Mean (SD)	32.8 (5.3)	23.7 (4.7)	56.6 (9.2)	30.8 (5.4)	21.9 (4.0)	52.7 (8.6)
t	2.08	2.36	2.49			
P	0.043*	0.023*	0.016*			
Agreement (ICC)	0.38	0.37	0.44			
Correlations						
Trust (DTS)	0.51*	0.60**	0.63**	0.60**	0.58**	0.63**
Conflict (PQ)	-0.31	-0.65**	-0.53**	-0.33	-0.35	-0.35
Tenderness (PQ)	0.74**	0.53**	0.73**	0.43*	0.36	0.42*
Communication (PQ)	0.75**	0.49*	0.73**	0.40(*)	0.33	0.39(*)
Total (PQ)	0.74**	0.63**	0.78**	0.48*	0.43*	0.49*

* $P < 0.05$, ** $P < 0.01$, (*) $P < 0.1$. SQCRC, Scale for Quality of the Current Relationship in Caregiving; AD, Alzheimer's disease; SD, standard deviation; ICC, intraclass correlation coefficient; DTS, dyadic trust scale; PQ, partnership questionnaire.

Table 3 Associations with quality of life of the person with Alzheimer's disease: bivariate correlations and regression analysis

Variables	<i>r</i>	β
Patient variables		
Relationship quality (SQCRC)	0.37**	0.19
Cognitive status (MMSE)	-0.14	
Awareness of disease (CIR)	0.13	
Functional impairment (B-ADL)	-0.35*	-0.13
Depression (GDS)	-0.36**	-0.25*
Neuropsychiatric symptoms (NPI)	-0.27	
Caregiver variables		
Relationship quality (SQCRC)	0.51**	0.45**
Depression (CES-D)	-0.19	
Anger-in (STAXI)	0.05	
Anger-out (STAXI)	-0.02	
Burden (ZBI)	-0.33*	0.19

* $P < 0.05$, ** $P < 0.01$. SQCRC, Scale for Quality of the Current Relationship in Caregiving; MMSE, Mini-Mental State Examination; CIR, clinical insight rating; B-ADL, Bayer activities of daily living scale; GDS, geriatric depression scale; NPI, Neuropsychiatric inventory; CES-D, Centre for Epidemiological Studies depression scale; STAXI, state trait anger expression inventory; ZBI, Zarit burden inventory.

correlations with a number of variables were performed. In a second step, the variables with significant correlations were subjected to a regression analysis. Table 4 presents the results of the correlational and regression analyses. With regard to the patient variables, awareness (CIR, $r = 0.31$, $P < 0.05$) and neuropsychiatric symptoms (NPI, $r = 0.43$, $P < 0.05$) correlated with discrepancy. With regard to the caregiver variables, depression (CES-D, $r = 0.33$, $P < 0.05$), suppressed anger (STAXI anger-in, $r = 0.31$, $P < 0.05$) and burden (ZBI, $r = 0.43$, $P < 0.05$) correlated with discrepancy. When these

Table 4 Associations with discrepancy in relationship quality: bivariate correlations and regression analysis

Variables	<i>r</i>	β
Patient variables		
Cognitive status (MMSE)	-0.29	
Awareness of disease (CIR)	0.31*	0.26*
Functional impairment (B-ADL)	0.18	
Depression (GDS)	0.09	
Neuropsychiatric symptoms (NPI)	0.43*	0.20
Caregiver variables		
Depression (CES-D)	0.33*	0.01
Anger-in (STAXI)	0.31*	0.26*
Anger-out (STAXI)	0.09	
Burden (ZBI)	0.43*	0.38**

* $P < 0.05$, ** $P < 0.01$. MMSE, Mini-Mental State Examination; CIR, clinical insight rating; B-ADL, Bayer activities of daily living scale; GDS, geriatric depression scale; NPI, Neuropsychiatric inventory; CES-D, Centre for Epidemiological Studies depression scale; STAXI, state trait anger expression inventory; ZBI, Zarit burden inventory.

variables were included in a regression analysis, only awareness of disease, the caregiver's burden and suppressed anger were associated with a discrepancy in relationship quality.

DISCUSSION

In this study, we investigated the quality of the caregiving relationship and QOL in mild AD. The objective of this study was threefold: to examine the validity of the German version of the SQCRC²² to investigate the association of relationship quality with QOL; and to investigate the predictors of the discrepancy between the patients' and caregiver's rating of the relationship quality.

Evaluation of the SQCRC

The results show that the German version of the SQCRC indicated a very good validity when rated by the person with AD, and a good validity as rated by the caregiver. Furthermore, the internal consistency was shown to be good ($\alpha = 0.93$ in patients and 0.87 in caregivers), which is consistent with the original version.²³ The inter-rater reliability was good for the subscale warmth, but low for the subscale conflict.

The results provide initial support in favour of the self-report scale of relationship quality which is able to estimate the quality of caregiving relationship as rated from both perspectives, the person with AD and the caregiver. The results clearly demonstrate a good validity of the SQCRC and show that people with mild dementia are able to assess the quality of their relationship.

Associations with QOL in the person with AD

In correlation and regression analyses, we were able to demonstrate that relationship quality as rated by both the person with AD and his caregiver was significantly associated with QOL of the person with AD. From all the other variables, only the functional impairment and depression of the patient and the caregiver burden were associated with QOL in the person with AD. Depression suffered by the patient and relationship quality (rated by the caregiver) remained the only predictors in a regression analysis. Neither the cognitive and non-cognitive symptoms of the patients, nor the affective symptoms of the caregiver were significantly associated with QOL in the person with AD.

This finding supports the previous research showing that the quality of the relationship as rated by AD patients enhances the prediction of self-rated QOL.⁵¹ Research has found that the relationship of the patient with the caregivers in early-stage dementia also turns out to be a fundamental aspect of the experience of daily living.¹⁹

Further, consistent with the results of previous studies,^{7,52,53} the cognitive status in AD patients was not significantly related to QOL. However, contrary to our findings, some longitudinal research found significant effects of cognitive status (as measured with the MMSE) on the QOL-AD patients.⁵⁴ This finding suggests that a follow-up study might demonstrate the effect of cognitive status on QOL-AD patients.

The burden among the caregivers correlated significantly with QOL. These results are consistent with previous reports suggesting that the relationship quality between the AD patients and their family caregivers was a significant predictor of the level of burden experienced by family caregivers, resulting in mental health problems like depression.⁵⁵ However, our results indicate there was no relationship between awareness in AD patients and QOL, which is consistent with previous findings.⁵³

Associations with discrepancy in relationship quality

There is a significant rating discrepancy with regard to relationship quality between the person with dementia and the caregiver. The person with dementia perceives more warmth and affection and less conflict and criticism in the relationship. This fits with the well-documented rating differences with regard to several mental health measures, such as depression and QOL.^{56–58}

The traditional interpretation of those rating discrepancies includes a reference to the level of awareness of individuals with dementia. The conclusion of this interpretation is that the more the caregiver's rating exceeds the patient's rating, the more impaired the patient's awareness is.⁵⁹ However, other studies have demonstrated that it is not only the patient's awareness, but also the caregiver's burden that predicts the discrepancy ('caregiver rating bias'^{13,60}). Rating discrepancies of this kind might therefore reflect both the patient's underrating and the caregiver's overestimating of the patient's symptoms.

In the case of the relationship quality, the perspective of both individuals could also be different in cognitively healthy couples. However, the mean ratings in cognitively healthy couples would be expected to be the same. Therefore, our finding that the patient's rating is consistently better than the caregiver's rating fits with the aforementioned findings.

There are also other explanations for the fact that the patients assess the relationship more positively. It has been hypothesised that persons with AD have a reduced access to self-knowledge including the history of the relationship with the caregiver.⁶¹ It might be that the person with AD can better access positive experiences with the caregiver (positivity effect) than negative experiences, which in turn might lead to a more positive rating of the relationship.

In addition, emotional and motivational processes might lead to the more positive rating of the persons with AD. They might increasingly feel dependent on the caregiver and, thus, fear the loss of love, care, and security. The more positive rating of the relationship might be an attempt to secure the status quo of the relationship. However, it is not clear so far, how strong the influence of motivational/emotional versus cognitive factors on the rating discrepancy is. It has been found that people with dementia generally rated the quality of relationship higher, irrespective of level of dementia, depression or anxiety.⁶² Thus, the cognitive factors might dominate the emotional factors.

In the present study, the same predictors of discrepancy in relationship quality were found as those in previous studies, with different measures such as depression and QOL. On the side of the person with dementia, it is mainly the lack of awareness of the disease that predicts the discrepancy, while on the side of the caregiver it is mainly the burden and anger which is turned inward.

The psychological burden of the caregiver might impair his ability to feel warmth and affection and make him more sensitive to criticisms in the relationship, thus changing communication toward the patient.^{22,63}

The lack of awareness, at least partly due to the cognitive deficits of the person with dementia, might result in a lower ability to precisely determine the relationship quality.⁶⁴ However, the lack of awareness cannot only be attributed to cognitive deficits. The biopsychosocial model of awareness adds psychological (e.g., anxiety, self-concept) and social

factors to the cognitive factors.⁶⁵ It has been shown that the rating discrepancy was associated with current affective functioning, besides cognitive status. Therefore, lack of awareness might also be due to affective dysfunction. In contrast, psychodynamic processes such as a repressive coping style were shown to contribute to lack of awareness.⁶⁶

Bjørge *et al.*⁶⁷ have also pointed to an inconsistency between the caregiver and the AD patient's perceptions of their relationship, and suggested that supporting distressed caregivers in changing their negative perspective might be helpful for them and their relationship quality.

Further, our results showed that people with mild AD are still able to rate their relationship quality as well as QOL, which is in line with previous research.⁷

Study limitations and outlook

Some limitations of the present study must be acknowledged. The sample of this study included people with mild AD living at home. It cannot therefore be generalised to all levels of severity of dementia or AD patients and those living in residential care.

It is important that future studies perform a more comprehensive research, including all stages of dementia. Moreover, future longitudinal data with a larger sample of AD patients and their caregivers might provide more definitive results on the development of and change in the relationship quality, and enhance the QOL of the caregivers and care receivers. Also, the effect of psychological interventions in order to improve and modify the quality relationship in AD patients is worth studying.

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